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ABSTRACT

Ninety-seven developmentally disabled mentally retarded persons (aged 10 to 48 years) living in an institution, in group homes, or at home were trained in environmental language, speech, and reading skills using a game oriented multisensory approach. The evening tutorial program consisted of 20 sessions over a 6 month period. A pedagogic and task specific assessment methods were detailed to ensure replicability. Posttest data for 81 individuals treated and 109 in the control group showed improvement in the order of self help skills predicted (most improvement in speech and least in language). When the findings were analyzed according to living arrangements, a different order of effects was indicated (most improvement in Ss from institutions and least in Ss living at home), defending the importance of both settings and training methods to the normalization process. (Author/DB)

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Effects of Deinstitutionalization and Environmental Training on Functional Language, Speech, and Reading

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Effects of Deinstitutionalization and Environmental Training on Functional Language, Speech, and Reading

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The purpose of the investigation was to examine the effects of deinstitutionalization and self-help training on the learning of functional communication skills. In the present study, three levels of living arrangements (i.e., own home, group home, and institutional residence) were represented in groups of developmentally disabled mentally retarded (DDMR) individuals participating in a community-based tutorial and sociorecreational program. The game-oriented multisensory (GOMS) methods and materials employed were designed to develop awareness and survival skills in functional language, speech, and reading, as previosly reported (Reing, 1976a,b; 1978a,b; Notes 1 & 2).

Improvement in multisensory (MS) awareness of self and others (i.e., body-image, self-concept, and social perception; Valett, 1974) and environmental adjustment interactively affects/is affected by cognitive communication skills in a spiralling learning process (Zetlin & Gallimore, 1980). Nonverbal and verbal speech behaviors precede symbol and word recognition and their appropriate linguistic application should facilitate environmental interactions, according to Poulton and Algozzine (1980). Measures of functional speech, oral and/or signed, and basic reading and language skills have been used effectively to evidence improvement in evaluating instructional programs for the language-handicapped (McNutt & Leri, 1979).

The study's functional speech skills were operationalized as total communication behaviors (i.e., basic signs and/or evoked words) individually matched to each pupil's personal-social needs and physical-intellectual strengths and limitations (Wolf & MacAlonie, 1977). Functional reading skills were measured as the ability to identify and respond to survival travel-training and self-help words and phrases in social contexts (Allington, 1980). Gains in functional language, measured by the criterion use of these words and phrases in self-help and problem-solving situations, reflected an optimal ability to communicate that requires the most training and time to develop, and is affected by environmental demands and individual differences in skills and motivation (McNutt & Leri, 1980).

Thus, it was further posited that improvement on criterion skills would occur differentially in DDMRs residing in institutions, group homes, or their own or foster homes. The descending order of effects (i.e., speech > reading > language) for combined groups was predicted to be different for pupils identified by settings, to test the hypothesis proposed by Thurman and Fiorelli (1979) et al that incidental environmental variables (e.g., living arrangements and training field sites) determine research outcomes in addition to treatment and measurement methodology. Therefore, if results regardless of settings were the same or similar when differentiated by settings, then intervening environmental factors can be regarded as inconsequential.

Most of the institutionalized and all of the other pupils received standard day-time instruction in equivalent public school or workshop settings. The few state residential DDMRs who were schooled in their own facility attended classes organized and taught by licensed public

school personnel. There were no general differences in programmed pedagogic services, only obvious differences in living arrangements. Hence, as predicted, the more segregated and non-normative the residential environment, the greater the gains expected from a "least restrictive" tutoring program emphasizing the acquisition of basic functional skills requisite for normalization.

Similar methods and materials have been used previously to teach functional and normative skills to the mentally retarded: social interaction (Aloia, Beaver, & Pettus, 1978); sharing and following rules (Marlowe, 1980); cognitive and judgmental (Ross & Ross, 1978); computational and problem-solving (Reing, 1976a,b; Notes 1 & 2); body-image and movement (Cratty & Breen, 1972); logic and strategy (Spitz, 1979, pp. 131-137); motoric and physical fitness (Accardo & Capute, pp. 109-131; Stoller & DiSalvo, 1978); speech and communication (Elder & Bergman, 1978; Hobson & Duncan, 1979); language (Dewart,1979; Snyder et al, 1975; Wolf & McAlonie, 1977); imagery and coding (Reing, 1978a,b; Notes 3 & 4); peer acceptance and adjustment (Marlowe, 1979; Peterson & Horalick, 1977); functional reading (Mason, 1978); etc. In these studies, treatment and/or evaluation involved the use of games, structured play, equipment, and procedures that stimulated and elicited responses in all sensory modalities. Lessons included motor-coordination activities and required MS planning and teaching, as in the present research.

Method

Experimental Groups

Subjects. Ninety-seven DDMR pupils (CA 10-48, IQ 25-70) participated in an evening tutorial program offered by a graduate competency-based teacher-training program. Fifty-four came from a local state

residential facility, 29 from group homes, and 14 from their own homes, brought by parents or guardians. Announcements and community meetings were utilized to reach all the eligible parents and agency personnel in the major urban area. All those willing and able to attend were included in the program, free except for transportation costs absorbed by agencies or families themselves.

The pupils' DDMR status (i.e., MR + one or more physical disabilities Accardo & Capute, 1979, pp. 16-20), adaptive behavior ratings (Adaptive Behavior Scale data; Weber & Epstein, 1980), functional communication skills, and background information were obtained from parents (i.e., natural or foster), guardians, counselors, and aides during the initial intake session, confirmed and supplemented by school, agency, or institutional records. Their teachers provided copies of individualized educational programs (IEPs) in short and long-term forms. Educational, medical, psychological, and adjustive data were used to place pupils in 14 classes primarily on the basis of indicated generic need, although groups so constituted were usually categorically homogeneous. Graduate state and city licensed/certified teachers conducted the intake and placement procedures, under continual supervision by instructors in the program. After functional and social competencies were determined, pupils were randomly assigned to compatible groups and classrooms. Each class received three teachers, depending on the level and number of pupils. Pupil-teacher ratio averaged 3.5:1 for a total of 97 pupils, 14 classes, and 45 teachers. All assignments were made from a list of random numbers, in accordance with the requirements of a posttest-only control group design (Reing, 1979, pp. 3-15) for field research.

Settings. Since the only local state residence was tapped, and group homes and families were all contacted, and they voluntarily attended the program, an equitable cross-section of the large urban area was represented. For example, 44% of the pupils were Black and 23% Hispanic, approximating the incidence of nonwhite DDMR persons in the area. In general, male-female pupil ratios of 3.4: 1.9 in the state facility, 2.3 to 1.8 in group homes, and 1.6 to 1.2 living at home were found in the groups. However, while approximately 76% in the institutional sample were nonwhite, presumably being trained and awaiting deinstitutionalization, only 27% in group homes operated by public parent and religious organizations were nonwhite, The discrepancy was attributed to de facto neighborhood patterns of client services, reflecting the actual ethnicity ratio of applicants rather than a deliberate inequitable placement policy.

Field-site. The site for the tutorial program was a public elementary school used both by regular and special education classes during the day. The gym, rooms and equipment were ideally matched to the physical and pedagogic needs of the pupils in the study. Pupils in wheelchairs and others needing occasional lavatory assistance were helped by aides who accompanied them to the school.

Control Groups

Subjects. A total of 126 DDMR pupils comprised 14 control groups, matched to the 97 pupils in 14 experimental groups on IQ, CA, sex, ethnic and setting criteria. Equal-size groups, however, could not be obtained for posttesting during the final two treatment sessions. Some pupils were ill, or visiting with families, or vacationing at camps. None of the control group individuals attended the tutorial

program, but received equivalent attention (e.g., individualized tutoring, social activities, games, Scout meetings) in other evening programs. All had similar curricular experiences in their daytime educational or occupational training programs.

Settings. As noted, the pupils were also differentiated by their living arrangements. Thus, 73 were from the same state residential facility as those in the experimental groups and 36 were from the same or similar group homes. The 17 who lived at home attended public or private school programs, the same as, or comparable to, the 14 in the matched control group. At the field site, pupils were assigned to groups on the basis of pedagogic need and intellectual, social, and curricular compatibility. Consequently, most groups contained varying proportions of pupils from the three settings described. Generic grouping combined with prescriptive methods permitted "least restrictive" programming (i.e., less and more handicapped together).

The 14 experimental and 14 matched control groups were so constituted to promote possibly more effective tutoring and permit a valid comparison of gains. The posttest data were first analyzed on the basis of performance on each of three criterion measures by pupils in all groups. Next, the same data were treated separately for the three environmental setting variables, to determine their indirect (linked) effects on learning potential. The composition of the matched experimental and control groups and the three settings' groups are presented below in Tables 1,2, and 3 respectively.

Insert Tables 1, 2, and 3 about here

Experimental Treatment

A posttest-only control group design was employed to eliminate

the practice effect of pretesting to which institutionalized DDMRs are particularly susceptible. Attention in any form tends to reinforce contiguous behavior and constitutes treatment, even if adventitious (Balla & Zigler, 1979, pp. 159-163). In each of the 14 classes (i.e., groups A-N), the teams of randomly assigned teachers alternated tutoring activities for 1½ hours, and motor education (movement training) in the school's gym for ½ hour. The 20 sessions during two-consecutive semesters within a six-month period provided a total of 40 hours of intensive pedagogic intervention. Every 20-30 minute lesson was required to use GOMS approaches in planning, strategies, use of materials, and procedures, as judged by standard supervisory rating scales (Reing, 1976b; Notes 1 & 3).

Accordingly, each lesson devolved from a game featuring planful play, creative materials, varyingly structured rules or steps, imaginal roles, movement, perceptomotor coordination, and controlled interaction. The express purpose of teaching was to achieve IEP-related objectives: the proper selection and use of eating utensils at a mock breakfast; reading and speaking or signing survival words, such as names of self, peers, and basic environmental objects; survival communication skills such as location of exit stairs, lavatories, etc. Activities stressed interaction of all the senses in sensing, perceiving understanding, and using a wide variety of materials. Kinesthetic concrete learning preceded abstract body-image and language-related coding experiences. Both signing and oral expressive skills were taught (Jones, 1980). Functional reading tasks of survival words, phrases, or sentences were matched to cognitive levels and needs (Schilit & Caldwell, 1980). They were incorporated in games reflecting environmental realities (e.g., shopping, using the bus, going to the

movies, telephoning a friend, etc.) and emphasizing skills conducive to the overall deinstitutionalization and normalization process (Wheeler et al, 1980).

Representative GOMS lessons serving as models for the present research and numerous studies generated by previous programs at the same site have been reported (Reing, 1979). Videotapes of randomly selected lessons are also available to facilitate replication, since complex learner/learning-teacher/teaching behaviors and multimodal interactive processes may lack accurate written representation.

Posttests

Valett's (1974) language development subtests (i.e., 37-41) were used with instructions for the tasks modified for DDMR pupils (Reing, 1979, pp. 27-407). In addition, task-specific curriculum-relevant posttests were administered during the last two sessions to appropriately matched experimental and control groups, the former at the field-site, and the latter in their respective day program settings. The tests comprised items of graded difficulty derived by random visits to classes and the monitoring of GOMS lessons by 28 certified teachers in the same graduate program. They were enrolled in an advanced research course, at no time performed tutorial duties, and were randomly assigned to classes. Testers had no input in IEPs, lesson plans, or teaching strategies. They were randomly assigned to posttest classes they had not previously monitored to obtain sample test items.

All the lessons conformed to the stated GOMS guidelines. Curricular context and thrust were the same as those used daily in the pupils' daytime program in one of the three settings. Test items reflected CA, IQ and psychosocial levels, tasks commonly presented, and relevant curricular content. If standardized norm-and-curriculum

relevant tests are unavailable or never even developed, task-specific criterion-referenced tests are more appropriate as well as the only alternative to realistic assessment (Anastasi, 1979; Fleishman, 1972). To date, standardized tests or scales of the study's dependent criteria, with norms based upon representative DDMR samples have not been reported.

The 28 criterion-referenced tests (Reing, 1979, pp.27-407) were standardized at the study's field-site over a period of five years during which similar groups of DDMR pupils have been tutored and evaluated. Each 15-minute test has specifically detailed instructions and descriptions for setting, materials, tester's voice and manner, sequence and timing, printed and/or taped to facilitate accurate and consistent replication. The pupils previously tested are also exactly described (e.g., IQ and CA levels, programs, sex, disorders, syndromes, socioeconomic and family data, etc.) to permit matching in replicative research.

To augment motivation and active rapport with the tester and tasks, every test included a game (e.g., mock shopping trip, sequence type softball, puppets, etc.) and interesting materials (e.g., boxes, masks, costumes, clay, money, etc.). Representative sample items were also provided which had to be successfully completed before the tester continued, ensuring that the tasks, directions, and objects were thoroughly comprehended. The test items were graded in difficulty so that every pupil would experience some degree of initial success. A forced-choice scale scoring method (i.e., 0-2 points each; maximum score=10) was employed. Testing sessions were randomly videotaped to increase replicability, as indicated, a major problem in test-testing procedures with the handicapped (Salvia & Ysseldyke, 1978,

pp. 170-195). Testers, all certified experienced teachers, were trained to be objective accurate observers. Thus, retest reliability, for matched groups during the four years of standardization was initially high (r=.79) and continually increased (r=.81-.84). Inter-scorer reliability was also favorable (i.e., .74-.76) considering the many difficulties usually encountered in testing DDMRs at a community field-site.

Results

One-way classification analyses of variance (ANOVA) were repeated to evaluate posttreatment improvement on the study's three criterion dependent measures, with Scheffé tests to assess group mean differences. One-way classification ANOVA were also used to reflect gains attributed to living arrangements, thus affording a static comparison of the incidental effects of contrasting milieus. Scheffé tests, moreover, were performed to test the significance of group means for the three diverse settings.

Functional Skills

Findings for all 14 experimental groups (A-N; see Table 1) were pooled to produce composite scores for the dependent functional skills, compared to posttest gains measured in the 14 matched control groups (A-N; see Table 2). All subjects were assessed at the same time following the treatment period. Ninety-seven pupils comprised the original treatment groups, but absences due to illness (16.5%) in the final testing session reduced this number to 81. For similar reasons, 109 control group DDMRs were posttested (13.5% absent) rather than the original 126 (see Table 2). Attrition was therefore relatively equally distributed in all groups.

Post-treatment findings showed improvement, in descending order,

in speech, F (1,188)= 31.64, $p < .001$, reading, F, (1,188)=28.76, $p < .001$, and language F, (1,188)=16.79, $p < .001$, in the combined experimental groups compared to control group posttest data obtained. The Scheffé analyses were similar: speech, t (188)=5.62, $p < .001$; reading, t (188)= 5.36, $p < .001$; language, t = 4.10, $p < .001$ (see Table 4).

Insert Table 4 about here.

But, when findings were sorted by settings, the descending order and points of confidence on the two-tailed tests varied. Compared to control group DDMRs matched on settings as well as IQ, CA, and curricular characteristics, state residential pupils indicated improvement in reading, F (1,113)=12.02, $p < .001$, speech, F (1,113)=11.74, $p < .001$, and language, F (1,113)=8.88, $p < .01$. Similar Scheffé differences were found: reading, t (113)=3.47, $p < .001$; speech, t (113)=3.43, $p < .001$, language, t (113)= 2.98, $p < .01$. Group home residents, on the same criteria, were ameliorated in reading, F (1,51)=11.14, $p < .01$; speech, F(1,51)=9.80, $p < .01$, and language, F (1,51)=7.46, $p < .01$. Scheffé findings were comparable: reading, t (51)=3.34, $p < .01$; speech, t(51)= 3.13, $p < .01$; language, t (51)=2.73, $p < .01$.

However, the posttest findings were discrepant for DDMRs living in their own or foster homes: reading, F (1,20)=6.45, $p < .05$; language, F(1,20) =4.12, $p > .05$(N.S.); speech, F(1,20)=3.89, $p > .05$(N.S.). Moreover, Scheffé analyses confirmed these inconsistent group mean differences: reading, t(20)=2.54, $p > .05$; language, t(20)=2.03, $p > .05$ (N.S); speech, t(20)=1.97, $p > .05$ (N.S.).

Discussion

The findings therefore supported the first hypothesis that the study's GOMS strategies would ameliorate all DDMR classes on the three criterion measures, consonant with the predicted order of effects:

speech > reading > language. Both the ANOVA and Scheffé data evinced the efficacy of the experimental methods.

The speech vs. reading gains were only minimally different. But, greater overall improvement in speech was ascribed to increased susceptibility to change resulting from a total communication approach (Bloom, 1975; Van Hattum, 1979), than to task-analytic prescriptive instruction in functional reading, even though featuring the same GOMS methodology. With nearly similar significance data obtained for both speech and reading tutorial interaction, they should be considered equally effective in increasing self-help communication skills. Thus, the viability of speech improvement programs, long supported by adherents of regular speech services for DDMRs (e.g., Elder & Bergman, 1978; Hobson & Duncan, 1979; Jones, 1980), was further defended by the data.

When the total results from the 14 integrated classes were sorted according to the three diverse living arrangements, the study's second hypothesis that improvement would be indicated differentially (i.e., institution > group homes > own or foster homes), was largely supported. As noted, institutional, and less so group home pupils experienced amelioration on all criterion measures. But, gains reflected in pupils residing in their own or foster homes were least evident in reading, but nonsignificant in language and speech.

This discrepant finding was attributed in part to the much smaller number of such pupils treated (14) and posttested (10). They had to be brought to and from home by parents or guardians, many using public transportation at their own expense, while institutional and group home pupils were transported in their own buses. They lived with parents or guardians in small family units, and received more individual attention and agency services. They had never been or only briefly institu-

tionalized and/or managed in group homes before placement with relatives or guardians, or had lived at home since infancy. All had attended/were attending public school or private programs. As indicated in Table 4, the mean levels for the total number posttested (22) in both the experimental and control groups generally exceeded those of pupils in institutional or group home settings, except for speech.

Accordingly, it was posited that pupils living mostly or always at home not only had higher functioning skills initially, but had fewer deficiencies to ameliorate. Their gains over control group subjects as noted, were only minimal in reading and nonsignificant in language and speech. Relative non-improvement on the research's speech criteria was attributable to a likely greater overprotective environment provided by own-home settings, though the most mainstreamed of possible arrangements.

An alternative position (Guralnick & Paul-Brown, 1980) that mainstreamed or integrated conditions facilitate communicative adjustments (e.g., speech) was therefore not defended by the data. Apparently, while parents, guardians, and siblings model consistent normative speech behaviors for familial DDMRs to a greater extent than can peers and personnel in less normalized settings, they tend to reinforce dependence. For, as reported (Bloom & Lahey, 1978), they characteristically anticipate their needs before they are vocalized, or respond promptly to gestures or substandard speech without first demanding more appropriate utterances. Parents and guardians of pupils in the program living at home regularly attended workshop training sessions at the field-site. But, insistence upon more normative speech and the consistent application of modeling and shaping methods taught were ostensibly ineffectual.

Conclusions.

The investigator studied the direct effects of training and indirect effects of setting variables on the functional communication skills of DDMR pupils. The GOMS interventive and testing methods, procedures, materials, and settings were elaborated and taped, and subjects' representative characteristics and living arrangements detailed. Posttest language, speech, and reading performance data, examined across performance and setting variables, generally supported the treatment hypotheses. Minor discrepant findings were ascribed to the interaction of limited size and speech experiences of the group living at home.

When findings were then analyzed by settings, significant differences in improvement were revealed: institutional > group homes > own homes. Hence, the more segregated (nonnormative) the setting, the more susceptible were DDMRs to community-based least restrictive intervention. Another important conclusion reached was that degree of deinstitutionalization directly affected the acquisition of specific communicative self-help skills essential to the normalization process. The finding supported the concerns of researchers (e.g., Phillips & Balthazar, 1979; Thurman & Fiorelli, 1979; Zigler & Muenchow, 1979) who dispute the inadequate control of settings and use of global measures that they find in most studies. The results also demonstrated that the study's criterion-referenced posttest measures of task-specific skills were feasible and particularly sensitive to pupil characteristics and treatment gains, precluding dependence on norm-referenced measures considered discriminatory and inappropriate (Ysseldyke & Regan, 1980) for handicapped learners. Further research under varying field conditions and employing different representative settings is recommended, to increase the generalizability of the findings.

Reference Notes

1. Reing, A.B. Competencies for teachers of the mentally retarded: Graduate program. In A. B. Reing (Chair), A bowling-mathematics program for the mentally retarded: A competency=based training program for teacher interns. Paper presented at the meeting of the New York State Council for Exceptional Children, Buffalo, New York, November 1974.

2. Reing, A. B. Task-analytic perceptomotor training of neuropathic retardates in sociorecreational school-college-community programs. Paper presented at the meeting of the New York State Council for Exceptional Children-American Association on Mental Deficiency Bicentennial Conference, Syracuse, New York, October 1976.

3. Reing, A. B. Imaginal behavioral analysis: A multisensory imagery scale for predicting interpersonal skills in human services personnel. Paper presented at the meeting of the New York State Psychological Association, New York, New York, May 1980.

4. Reing, A. B. Imaginal behavioral analysis: A multisensory imaginal scale for predicting a specific teacher competency. Paper presented at the meeting of the American Psychological Association, Montreal, Canada, September 1980.

References

Accardo, P. J., & Capute, A. J. The pediatrician and the developmentally delayed child: A clinical textbook on mental retardation (Vol. 2). Baltimore: University Park Press, 1979.

Allington, R. L. Word frequency and contextual richness effects on word identification of educable mentally retarded children. Education and Training of the Mentally Retarded, 1980, 15, 118-121.

Aloia, G. F., Beaver, R. J., & Pettus, W. F. Increasing initial interactions among integrated EMR students and their nonretarded peers in a game-playing situation. American Journal of Mental Deficiency, 1978, 82, 573-579.

Anastasi, A. Psychological testing (4th ed.). New York:Macmillan,1976.

Balla, D., & Zigler, E. Personality development in retarded persons. In N.R. Ellis(Ed.), Handbook of mental deficiency, psychological theory and research (2nd ed.) Hillsdale, New Jersey:Lawrence Erlbaum, 1979.

Bloom, L. Language development review. In F. D. Horowitz(Ed.), Review of child development research (Vol. 4). Chicago: University of Chicago Press, 1975.

Bloom, L.,& Lahey, M. Language development and language disorders. New York: John Wiley & Sons, 1978.

Cratty, B. J., & Breen, J. E. Educational games for physically handicapped children. Denver:Love, 1972.

Dewart, M. H. Language comprehension processes of mentally retarded children. American Journal of Mental Deficiency, 1979, 84,177-183

Elder, P. S., & Bergman, J. S. Visual symbol communication instruction with nonverbal, multi-handicapped individuals. Mental Retardation, 1978, 16, 107-112.

Fleishman, E. A. On the relation between abilities, learning, and human performance. American Psychologist, 1972, 27, 1017-1032.

Guralnick, M.J., & Paul-Brown, D. Functional and discourse analysis of nonhandicapped preschool children's speech to handicapped children, American Journal of Mental Deficiency, 1980,84,444-454.

Hobson, P. A., & Duncan, P. Sign learning and profoundly handicapped people. Mental Retardation, 1979, 17, 33-37.

Jones, T. W. Is it necessary to decide whether to use a normal communication system with retarded children? Education and Training of the Mentally Retarded, 1980, 15, 157-160.

Marlowe, M. The games analysis intervention: A procedure to increase peer acceptance and social adjustment of a retarded child. Education and Training of the Mentally Retarded, 1979, 14,262-268.

Marlowe, M. Games-analyses: Designing games for handicapped children. Teaching Exceptional Children, 1980, 12, 48-51.

Mason, J.M. Role of strategy in reading by mentally retarded persons. American Journal of Mental Deficiency, 1978, 82, 467-473.

McNutt, J. C., & Levi, S.M. Language differences between institutionalized and noninstitutionalized retarded children. American Journal of Mental Deficiency, 1979, 81, 339-345.

Peterson, N. L,, & Haralick, J. G. Integration of handicapped and nonhandicapped preschoolers: An analysis of play behavior and social interaction. Education and Training of the Mentally Retarded, 1977, 12, 235-245.

Phillips, J. L., & Balthazar, E. F. Some correlates of language deterioration in severely and profoundly retarded long-term institutionalized residents. American Journal of Mental Deficiency, 1979, 83, 402-408.

Poulton, K. T., & Algozzine, B. Manual communication and mental retardation: A review of research and implications. American Journal of Mental Deficiency, 1980, 85, 145-152.

Reing, A. B. Dyscalculia in normal and retarded children: Etiology and treatment. Psychoeducational Journal for the Treatment of Children, 1976, 3, 7-15. (a)

Reing, A. B. Effects of task-analytic training on multisensory imagery and teacher competency. JSAS Catalog of Selected Documents in Psychology, 1976, 6, 119(Ms. NO. 1380) (b)

Reing, A. B. Correlates of multisensory imagery and teacher competency. JSAS Catalog of Selected Documents in Psychology, 1978 ,8, 47 (Ms.NO. 1699) (a)

Reing, A. B. Imaginal behavioral analysis: A multisensory imagery scale for evaluating a specific teacher competency. Journal of Special Education, 1978, 12, 152-170. (b)

Reing, A. B. Handbook of student research on teaching the mentally retarded. Jamaica, New York: Corinthian Organization Press, 1979.

Ross, D. M., & Ross, S. A. Cognitive training for the EMR child: Language skills prerequisite to relevant-irrelevant discrimination tasks. Mental Retardation, 1979, 17, 3-7.

Salvia, L., & Ysseldyke, J. E. Assessment in special and remedial education. Boston: Houghton Mifflin, 1978.

Schilit, J., & Caldwell, M. L. A word list of essential career/vocational words for mentally retarded students. Education and Training of the Mentally Retarded, 1980, 15, 113-117.

Snyder, L. K., Lovitt, T. C., & Smith J. O. Language training for the severely retarded: Five years of behavior analysis research. Exceptional Children, 1975, 42, 7-15.

Spitz, H. H. Beyond field theory in the study of mental deficiency. In N. R. Ellis (Ed.), Handbook of mental deficiency, psychological theory and research(2nd ed.). Hillsdale, New Jersey: Lawrence Erlbaum, 1979.

Stoller, N., & DiSalvo, C. Teacher training in motor education for the mentally retarded and other handicapped children. New York: Board of Education of the City of New York, Bureau for Children with Retarded Mental Development, 1978.

Thurman, S. K., & Fiorelli, J. S. Perspectives on normalization. Journal of Special Education, 1979, 13,339-346.

Valett, R. E. The remediation of learning disabilities: A handbook of psychoeducational resource programs (2nd ed.) Belmont, Calif: Fearon-Pitman, 1974.

Van Hattum, F. J. Developmental language programming for the retarded. Boston: Allyn & Bacon, 1979.

Weber, D. B., & Epstein, H. R. Contrasting adaptive behavior ratings of male and female institutionalized residents across two settings. American Journal of Mental Deficiency, 1980, 80, 397-400.

Wheeler, J.,Ford, A., Nietupski, J., Loomis, R., & Brown,L. Teaching moderately and severely handicapped adolescents to shop in supermarkets using pocket calculators. Education and Training of the Mentally Retarded, 1980, 15, 105-112.

Wolf, J.M. & McAlomie, M. L. A multimodality language program for retarded preschoolers. Education and Training of the Mentally Retarded, 1977, 12 , 197-202.

Ysseldyke, J. E., & Regan, R. R. Nondiscriminatory assessment: A formative model. Exceptional Children, 1980, 46, 465-466.

Zetlin, A. G.,& Gallimore, R. A cognitive skills training program for moderately retarded learners. Education and Training of the Mentally Retarded, 1980, 15, 121-131.

Zigler, E., & Muenchow, S.Mainstreaming: The proof is in the implementation. American Psychologist, 1979, 34, 993-996.

Table 1

Experimental Groups (Tutorial Classes)

Group	No	CAs	CA	IQs	Mean IQ	Settings
A	7	48-32	42.1	75-62	68.3	5:1:1
B	7	47-36	38.2	66-52	60.7	5:2:0
C	8	39-30	34.5	41-26	36.1	6:2:0
D	7	32-18	26.4	39-22	31.5	5:1:1
E	7	26-17	22.0	59-45	50.2	7:0:0
F	8	22-16	18.8	52-42	46.0	5:2:1
G	6	20-17	18.6	42-26	30.9	5:1:0
H	7	18-15	17.3	46-31	35.8	4:2:1
I	7	19-16	17.7	36-19	30.2	6:1:0
J	7	17-15	15.9	42-24	31.6	4:2:1
K	6	15-12	14.2	38-30	33.1	1:4:1
L	7	14-12	13.2	61-48	54.5	1:4:2
M	7	14-10	12.8	48-36	41.3	0:5:2
N	6	11-10	10.4	51-39	44.0	0:2:4
Totals:						
14	97	48-10	21.6	75-19	42.4	54:29:14

Notes. Abbreviations: CAs = chronological ages, range for each group; IQs= intelligence quotients, range for each group; Settings= ratio of pupils from state institution: in group homes: living at home.

Table 2

Control Groups (Equivalent Attention)

Group	No.	CAs	CA	IQs	IQ	Settings
A	9	50-33	41.2	74-63	69.1	7:1:1
B	10	48-36	38.3	66-54	61.2	7:2:1
C	9	40-32	35.1	42-28	35.0	5:3:1
D	8	33-17	27.6	40-25	30.8	6:2:0
E	10	26-18	23.5	48-41	46.5	9:1:0
F	11	22-17	19.4	53-42	48.9	9:1:1
G	9	21-16	18.4	44-30	33.4	7:2:0
H	7	18-15	16.9	48-37	39.1	5:2:0
I	10	18-14	17.5	35-20	26.2	8:1:1
J	8	17-14	16.0	41-22	28.5	4:2:2
K	10	15-13	14.7	37-29	34.0	4:4:2
L	9	14-11	13.2	59-46	52.2	2:5:2
M	9	13-10	12.5	47-34	40.4	0:6:3
N	7	12-10	10.6	49-40	45.1	0:4:3
Totals:						
14	126	50-10	21.8	74-20	42.2	73:36:17

Notes. Abbreviations: CAs = chronological ages, range for each group; IQs= intelligence quotients, range for each group;

Settings= ratio of pupils from state institution: in group homes: living at home.

Table 3

Experimental and Control Groups for Three Settings

Groups	No.	CAs	CA	IQs	Mean IQs
Experimental:					
O. Institutional	54	48-14	29.3	72-19	40.1
P. Group Home	29	46-11	16.7	73-34	44.5
Q. At Home	14	32-10	18.8	75-26	42.6
Totals:	97	48-10	21.6	75-19	42.4
Control:					
R. Institutional	73	50-13	28.9	70-20	40.3
S. Group Home	36	44-11	16.8	72-30	43.4
T. At Home	17	34-10	19.7	74-25	42.9
Totals:	126	50-10	21.8	74-20	42.2
Grand Totals:	223	50-10	21.7	75-19	42.3

Notes. Abbreviations: CAs= chronological ages, for each grouping; IQs= intelligence quotients, for each grouping;

Grand Totals= for all experimental and control group pupils.

Table 4

ANOVAs (Fs) and Scheffe (ts) Analyses of Posttest Performance on Functional Tasks

		Language		Speech		Reading	
DDR Group	N	M	SD	M	SD	M	SD
Total:							
Experimental (x)	81	8.47	3.88	7.93	3.10	8.91	3.73
Control (y)	109	6.30	3.08	5.62	2.53	6.26	3.05
F(1,188) =		16.79***		31.64***		28.76***	
t(188) =		4.10***		5.62***		5.36***	
Settings:							
Residential (x)	49	8.39	4.43	7.49	3.54	8.35	4.05
Residential (y)	66	6.17	3.49	5.42	2.88	5.94	3.33
F(1,113) =		8.88**		11.74***		12.02***	
t(113) =		2.98**		3.43***		3.47***	
Group homes (x)	22	8.51	3.06	8.04	2.63	9.32	3.70
Group homes (y)	31	6.41	2.42	5.96	2.11	6.23	2.90
F(1,51) =		7.46**		9.80**		11.14**	
t(51) =		2.73**		3.13**		3.34**	
Own/foster home (x)	10	9.18	2.33	6.47	1.14	9.29	1.40
Own/foster home (y)	12	7.24	1.95	5.56	.92	7.80	1.23
F(1,20) =		4.12		3.89		6.45*	
t(20) =		2.03		1.97		2.54*	

*p .05 **p .01 ***p .001